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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/085,581	02/26/2002	**Yu-Cheun Jou**	020278	8984

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EXAMINER	
PATEL, NIRAV B	

ART UNIT	PAPER NUMBER
2435	

NOTIFICATION DATE	DELIVERY MODE
11/25/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/085,581	JOU ET AL.	
	Examiner	Art Unit	
	NIRAV PATEL	2435	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 July 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-6,8-10,20,22-25,27-29 and 39-42* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-6,8-10,20,22-25,27-29 and 39-42* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Applicant's amendment filed on July 27, 2009 has been entered. Claims 1, 3-6, 8-10, 20, 22-25, 27-29, 39-42 are pending.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2. Claims 1, 3-6, 8-10, 20, 22-24, 25, 27-29, 39-40 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claim 1, recites "A method for scrambling information bits in a communications system comprising: determining a scrambling sequence based on a metric of system time.....; scrambling the information bits of the control message with the determined scrambling sequence....". It is noted that as **per method claims**, the Federal Circuit Courts recently ruled that for method claims to be statutory, the method must either (1) be tied to a machine or (2) transform an article, see In re Bilski, 545 F3d 943, 88 USPQ2d 1385 (Fed. Cir. 2008). The claim is directed to method steps which can be practiced mentally in conjunction with pen and paper, therefore same method steps are directed to non-statutory subject matter. Moreover, each of the claimed steps, inter alia, "determining a scrambling sequence....; scrambling the information bits of the control message with the determined scrambling sequence..." can be practiced mentally in conjunction with pen and paper. The claimed steps do not define a machine or

computer implemented process steps do not define a machine or computer implemented process (see MPEP § 2106).

Claims 3-5 depend on claim 1, therefore they are rejected with the same rationale applied against claim 1 above.

Claim 6 have limitations that are similar to those of claim 1, thus they are rejected with the same rationale applied against claim 1 above.

Claims 8-10 depend on claim 6, therefore they are rejected with the same rationale applied against claim 6 above.

Claim 20 recites, "An apparatus for scrambling information bits in a communication system, the apparatus comprising: means for determining a scrambling sequence....; means for scrambling information bits.....". The claimed apparatus directs to logic or module or algorithm and in accordance with the applicant's specification, logic or module or algorithm is computer software **[Specification, page 15, paragraph 1055]**. As such, the claimed apparatus must include hardware or physical transformation necessary to realize any of the functionality of the claimed modules and produce a useful, concrete and tangible result. Absent recitation of such hardware or physical transformation as part of the claimed apparatus, it is considered non-statutory.

Claims 22-24 depend on claim 20, therefore they are rejected with the same rationale applied against claim 20 above.

Claims 25, 39 and 40 have limitations that are similar to those of claim 20, thus they are rejected with the same rationale applied against claim 20 above.

Claims 27-29, depend on claim 20, therefore they are rejected with the same rationale applied against claim 20 above.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 3, 4, 6, 8, 9, 20, 22, 23, 25, 27, 28, 39-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dent (US Patent No. 5,060,266) and in view of Juha Heikkilae et al (GB 2294853).

As per claim 1, Dent teaches:

determining a scrambling sequence in accordance with time (i.e. time corresponding to a slot) [Fig. 4, 6, 7, time clock or block counter controls the operation of the time-of-day or block-count driven ciphering/deciphering device, including a synchronization mechanism, col. 12 lines 47-50, col. 11 lines 10-28]; determining the time in accordance with a subinterval of a system time interval (i.e. time slot) of a control channel in which the information bits of a control message are to be transmitted [Fig. 6, 7, col. 12 lines 59-62, col. 13 lines 2-4, col. 7 lines 24-37]; and scrambling the information bits of the

control message with the determined scrambling sequence in accordance with the time (corresponding to a slot) [Fig. 4-7, col. 12 lines 60-68, col. 13 lines 1-4].

Heikkilae teaches:

determining a scrambling sequence based on a metric of system time, wherein said determining a scrambling sequence includes determining the metric based on a subinterval of a system time interval [Fig. 7, page 11 lines 22-35, Fig. 6, 4].

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine Heikkilae with Dent to utilize the metric of system time for determining the scrambling sequence, since one would have been motivated to provide simple and flexible equipment for scrambling and descrambling data/information in the communication system [Heikkilae, page 3 lines 26-28].

As per claim 3, the rejection of claim 1 is incorporated and Dent discloses:

determining the metric (i.e. time corresponding to a slot) in accordance with a first subinterval of the system time interval [Fig. 7 → S1 or S2 or S3, time clock or block counter controls the operation of the time-of-day or block-count driven ciphering/deciphering device, including a synchronization mechanism, col. 12 lines 47-50, col. 13 lines 24-31].

As per claim 4, the rejection of claim 1 is incorporated and Heikkilae discloses:

performing mapping of the metric on the scrambling sequence [Fig. 7].

As per claim 6, Dent discloses:

determining an unscrambling sequence in accordance with time (i.e. time corresponding to a slot) [Fig. 4, 6, 7, time clock or block counter controls the operation of the time-of-day or block-count driven ciphering/deciphering device, including a synchronization mechanism, col. 12 lines 47-50, col. 13 lines 15-40]; determining the time in accordance with a first subinterval of a system time interval of a control channel (i.e. Fig. 7, time slot → S1 or S2 or S3 or S4) preceding a second subinterval of the system time interval by a pre-determined number of subintervals(i.e. Fig. 7, time slot → M5 or M21 or M37....etc.), wherein the second subinterval (i.e. message bits) comprises information bits of a control message transmitted on the control channel to be unscrambled [Fig. 4-7, col. 12 lines 60-63, col. 13 lines 21-24, col. 7 lines 24-37]; and unscrambling the information bits of the control message transmitted on the control channel with the determined unscrambling sequence in accordance with the time (corresponding to a slot) [Fig. 4-7, col. 13 lines 15-40].

Heikkilae teaches:

determining a unscrambling sequence based on a metric of system time, wherein said determining a unscrambling sequence includes determining the metric based on a subinterval of a system time interval [Fig. 7, page 11 lines 22-35, Fig. 6, 4].

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine Heikkilae with Dent to utilize the metric of system time for determining the scrambling sequence, since one would have been motivated to

provide simple and flexible equipment for scrambling and descrambling data/information in the communication system [Heikkilae, page 3 lines 26-28].

As per claim 8, the rejection of claim 6 is incorporated and Dent discloses:

determining the first subinterval of the system time interval preceding the second subinterval of the system time interval by one subinterval [Fig.7, S3 – M37, time clock or block counter controls the operation of the time-of-day or block-count driven ciphering/deciphering device, including a synchronization mechanism, col. 12 lines 47-50].

As per claim 9, the rejection of claim 6 is incorporated and Heikkilae discloses:

performing mapping of the metric on the unscrambling sequence [Fig. 7].

As per claim 20, it encompasses limitations that are similar to limitations of claim 1. Thus, it is rejected with the same rationale applied against claim 1 above.

As per claim 22, the rejection of claim 1 is incorporated and it encompasses limitations that are similar to limitations of claim 3. Thus, it is rejected with the same rationale applied against claim 3 above.

As per claim 23, the rejection of claim 20 is incorporated and it encompasses limitations that are similar to limitations of claim 4. Thus, it is rejected with the same rationale applied against claim 4 above.

As per claim 25, it encompasses limitations that are similar to limitations of claim 6. Thus, it is rejected with the same rationale applied against claim 6 above.

As per claim 27, the rejection of claim 25 is incorporated and it encompasses limitations that are similar to limitations of claim 8. Thus, it is rejected with the same rationale applied against claim 8 above.

As per claim 28, the rejection of claim 25 is incorporated and it encompasses limitations that are similar to limitations of claim 9. Thus, it is rejected with the same rationale applied against claim 9 above.

As per claim 39, it encompasses limitations that are similar to limitations of claim 1. Thus, it is rejected with the same rationale applied against claim 1 above.

As per claim 40, it encompasses limitations that are similar to limitations of claim 6. Thus, it is rejected with the same rationale applied against claim 6 above.

As per claim 41, it encompasses limitations that are similar to limitations of claim 1. Thus, it is rejected with the same rationale applied against claim 1 above.

As per claim 42, it encompasses limitations that are similar to limitations of claim 6. Thus, it is rejected with the same rationale applied against claim 6 above.

4. Claims 5 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dent (US Patent No. 5,060,266) in view of Juha Heikkilae et al (GB 2294853) and in view of Bodin (US Patent No. 6,973,189).

As per claim 5, the rejection of claim 1 is incorporated and Dent teaches performing an adding (using the modulo-2 adder Fig. 4, 203) of the information bits with the scrambling sequence [Fig. 4].

Bodin discloses:

performing an exclusive-OR of the information bits with the scrambling sequence [Fig. 2, col. 3 lines 41-46].

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine Bodin with Dent and Heikkilae, since one would have been motivated to provide the data transmission without needing to make substantial changes to the signaling protocol and/or system equipment [Bodin, col. 2 lines 14-16].

As per claim 24, the rejection of claim 20 is incorporated and it encompasses limitations that are similar to limitations of claim 5. Thus, it is rejected with the same rationale applied against claim 5 above.

5. Claims 10 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dent (US Patent No. 5,060,266) in view of Juha Heikkilae et al (GB 2294853) and in view of Fisher et al (US Patent No. 5,321,754).

As per claim 10, the rejection of claim 6 is incorporated and Fisher discloses:
performing an exclusive-OR of the information bits with unscrambling sequence [Fig. 3, col. 7 lines 13-15].
Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine Fisher with Dent and Heikkilae, since one would have been motivated to optimize the performance of the transmitter/receiver [Fisher, col.1 line 38].

As per claim 29, the rejection of claim 25 is incorporated and it encompasses limitations that are similar to limitations of claim 10. Thus, it is rejected with the same rationale applied against claim 10 above.

Response to argument

6. Applicant's arguments filed July 27, 20089 have been fully considered but they are not persuasive.

Regarding to applicant's argument to 35 U.S.C. 101, Examiner maintains since, claim 1 is not falling within one of the four statutory categories of invention. While the claims recite a series of steps or acts to be performed, a statutory "process" under 35 U.S.C. 101 must (1) be tied to particular machine, or (2) transform underlying subject matter (such as an article or material) to a different state or thing. See page 10 of In Re Bilski 88 USPQ2d 1385. The instant claim is neither positively tied to a particular machine that accomplishes the claimed method steps nor transforms underlying subject matter, and therefore does not qualify as a statutory process. The method for scrambling information bits in a communication system, comprising: determining a scrambling sequence and scrambling the information bits of the control message with the determined scrambling sequence, is broad enough that the claim could be completely performed mentally, verbally or without a machine nor is any transformation apparent and could be done in person. Further, the method does not expressively transform a particular article to a different state or thing. "Transformation" of an article means that the "article" has changed to a different state or thing. Changing to a different state or thing usually means more than simply using an article or changing the location of an article. A new or different function or use can be evidence that an article has been transformed. Manufactures and compositions of matter are the result of transforming

raw materials into something new with a different function or use. For data, mathematical manipulation *per se* has not been deemed a transformation, but transformation of electronic data has been found when the nature of the data has been changed such that it has a different function of is suitable for different use. Therefore, the rejection is maintained.

Claim 20 comprises, a row-hashing mechanism, a block-hashing mechanism, an encryption mechanism. The apparatus of claim 20 does not explicitly include a hardware component/element. Such claimed apparatus may be interpreted either as software, hardware or combination thereof necessarily includes hardware, is interpreted in its broadest reasonable sense as software/code/instruction [in accordance with application's specification page 15, paragraph 1055, the various logical blocks, modules, circuits and algorithms steps described in the present application may be implemented as electronic hardware, computer software or combination of both. Therefore, the claimed apparatus is not limited to hardware only or a combination of hardware and software only, instead being sufficiently broad so as to encompass software alone]. When software system is claimed without including a machine or a physical part of the device within the meaning of 35 USC § 101, it is considered non-statutory. Therefore, the rejection is maintained. Explicit presentation of a hardware component/element, which falls within the statutory category of 35 USC § 101, in combination with the claimed apparatus would overcome the rejection.

Regarding to applicant's argument to 35 U.S.C. 103, Examiner maintains since, Dent's invention relates to digital cellular communication system and method for the encryption/scrambling of data communication within such a system. A fast associated control channel (FACCH) generator exchanges control or supervisory messages with a base station in the cellular radio system. The ciphering code is generated by a ciphering unit with the user of a mathematical algorithm and the under control of a key 116. A keystream, which is a pseudo-random sequence of binary bits or blocks of bits used to encipher a digitally encoded message or data signal prior to transmission. A keystream generator which generates a keystream by processing a secret key comprised of a plurality of bits. The keystream generator provides the secret key into a much larger number of keystream bits which are then used to encrypt data messages prior to transmission. As shown in Fig. 4, the time-of-day driven encryption system utilizes a time clock or block counter for generating the count. With each occurrence of a new value for the count, the combination logic or mixing process combines or mixes the secret key with the count and generates a plurality of pseudo-random keystream. Fig. 6 shows the time-of-day or block count driven encryption system. A ciphering unit converts a stream of message bits into a stream of enciphered bits for transmission at a mean data rate of B1 bits/second and also provides a current time-of-day or block count. The auxiliary stream of B2 bits/second is then combined with the enciphered message stream of B1 bits/second by a multiplexer to produce a stream of B1 + B2 bits/second for transmission over the communications medium [Fig. 7]. Further, Heikkila's invention provide a simple and flexible equipment for data scrambling, in

which the scrambling sequence of the subscribers currently corresponding to the time slots of the transmission frame of a signal to be transmitted. A byte of a time slot specific scrambling sequence is read out and utilized to scramble the data. Therefore, the combination of Dent and Heikkila teaches the claim limitation "determining a scrambling sequence based on a metric of system time, wherein said determining a scrambling sequence includes determining the metric based on a subinterval of a system time interval of a control channel in which the information bits of a control message are to be transmitted".

For the above reasons, it is believed that the rejections should be sustained.

Conclusion

7. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nirav Patel whose telephone number is 571-272-5936. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kim Vu can be reached on 571-272-3859. The fax and phone numbers for the organization where this application or proceeding is assigned is 571-273-8300. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-2100.

/N. P./

Examiner, Art Unit 2435

/Kimyen Vu/

Supervisory Patent Examiner, Art Unit 2435